

AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111

Serial Number: 09/754,972

Filing Date: January 5, 2001

Title: METHOD AND APPARATUS FOR IMPROVING OUTPUT SKEW

Page 11

Dkt: 303.736US1

REMARKS

This is in response to the Office Action mailed on May 26, 2004, and the references cited therewith. In response thereto, claims 1, 10, 17, 43, 51, 68 and 69 are amended. As a result, claims 1-27, 43-54, 68 and 69 are still pending in this patent application. Reconsideration of this patent application is respectfully solicited.

Title of the Invention

In the Office Action, the title of the invention was deemed not descriptive and a new title is required. Applicant has amended the title as shown above to make the title more precise. Reconsideration and removal of this requirement is respectfully solicited.

Drawings

In the Office Action, the Examiner required that Figure 1 be labeled as prior art. Applicant respectfully submits that Figure 1 is not admitted prior art. Figure 1 is similar to Figure 27 on page 53 of the preliminary data sheet for the MT46V8M8 DDR SDRAM entitled "Double Data Rate (DDR) SDRAM, 64Mb: x4, x8, x16 DDR SDRAM", from Micron Technology, Inc., 2000, the assignee of the present invention. Applicant does not admit that its own publication is prior art. There is no admission that Figure 1 is prior art anywhere in the specification of the present patent application. Figure 1 was included to assist the reader in understanding the present invention, but not as an admission of prior art. See MPEP §2124 regarding supporting, but not predating, references.

Applicant respectfully requests that Figure 1 remain in this application since it aids the reader in understanding the complexities of the present invention and aids in the wide dissemination of information to the public. Applicant respectfully requests reconsideration of this requirement.

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Page 12
Dkt: 303.736US1

First §103 Rejection of the Claims

Claims 1, 2, 6, 7, 9, 68, and 69 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Nelson et al. (U.S. Patent No. 5,414,381) in view of Lee et al. (U.S. Patent No. 6,141,292). Applicant respectfully traverses this rejection based upon the amendments to the claims and the remarks listed below.

The Lee et al. patent is a removable reference as defined under 35 U.S.C. § 102(e). Applicant does not admit that the Lee et al. patent is prior art to the present patent application, and reserves the right to swear behind the Lee et al. patent at a later date. At this time, Applicant chooses to distinguish the Lee et al. patent.

The Nelson et al. patent describes a Cray computer architecture in which clock skew across wide areas of the mainframe is controlled. The Nelson et al. patent includes a good description of clock skew and the reasons to control it. But the skew compensation circuits do not operate on signal outputs, and do not operate to synchronize signal outputs. Further, the Nelson et al. patent does not determine the output delay based upon the other signal outputs and the Nelson et al. patent does not describe a synchronous integrated circuit.

The Lee et al. patent is a synchronous integrated circuit which generates internal clock signals without the use of PLL's and DLL's. The Lee et al. patent does not attempt to deskew output signals or synchronize output signals. Further, the Lee et al. patent does not have a feedback path from other outputs and it does not determine the output delay based upon the delay of other output signals.

Further, Applicant has amended independent claims 1, 10, 17, 43, 51, 68 and 69 to include the limitation of feedback, a feedback path or some other connection to the output signals to determine the individual delay for each output clock on the output buffer. These additional claim limitations are not found in the combination of the Nelson et al. and Lee et al. patents.

Applicant respectfully submits that the combination of the Nelson et al. and Lee et al. patents leaves out the very purpose of the present invention: to synchronize output data by unique delay of clock signals at each output. Since the combination of the Nelson et al. patent and the Lee et al. patent does not contain all of the elements of claims 1, 2, 6, 7, 9, 68, and 69, the rejection under 35 U.S.C. § 103(a) fails. Reconsideration of claims 1, 2, 6, 7, 9, 68, and 69 is respectfully solicited.

AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111

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Page 13

Dkt: 303.736US1

Second §103 Rejection of the Claims

Claims 3-5, 8, 10-27, 43-54, 68, and 69 were rejected under 35 U.S.C § 103(a) as being unpatentable over Nelson et al. and Lee et al. as applied to claim 1 above, and further in view of Schultz (U.S. Patent No. 6,340,905). Applicant respectfully traverses this rejection based upon the amendments to the claims and the remarks listed above and below.

As with the Lee et al. patent, the Schultz patent is a removable reference as defined under 35 U.S.C. § 102(e). Applicant does not admit that the Schultz patent is prior art to the present patent application, and reserves the right to swear behind the Schultz patent at a later date. At this time, Applicant chooses to distinguish the Schultz and the Lee et al. patents.

The claims have been distinguished from the combination of the Nelson et al. and Lee et al. patents as described above. The Schultz patent does not add the missing elements of the pending claims. Schultz describes a clock deskew tree with feedback lines, but the feedback is from the clock signals themselves, not from the output signals or data signals. The Schultz patent does not describe individual adjustments to each of the output buffers.

As described above, Applicant has amended independent claims 1, 10, 17, 43, 51, 68 and 69 to include the limitation of feedback, a feedback path or some other connection to the output signals to determine the individual delay for each output clock on the output buffer. These additional claim limitations are not found in the combination of the Nelson et al., Lee et al. and Schultz patents.

Applicant respectfully submits that the combination of the Nelson et al., Lee et al. and Schultz patents does not contain all of the elements of claims 3-5, 8, 10-27, 43-54, 68, and 69, and so the rejection under 35 U.S.C. § 103(a) fails. Reconsideration of claims 3-5, 8, 10-27, 43-54, 68, and 69 is respectfully solicited.

AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111

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Page 14
Dkt: 303.736US1CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at (612) 373-6904 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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Date Aug. 26, 2004 By Daniel J. Kluth
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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being transmitted to the United States Patent and Trademark Office via facsimile on this 26th day of August, 2004.

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Name

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